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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/106,994	06/29/1998	TONIA G. MORRIS	INTL-0061(P5	7440
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7590 07/26/2002

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EXAMINER

WHIPKEY, JASON T

ART UNIT

PAPER NUMBER

2612

8

DATE MAILED: 07/26/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/106,994

Applicant(s)

MORRIS ET AL.

Examiner

Jason T. Whipkey

Art Unit

2612

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 June 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-6 and 8-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-6 and 8-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 June 1998 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1, 3-6, and 8-17 have been considered but are moot in view of the new grounds of rejection.

This action is non-final because of the new grounds of rejection being applied to claims that are unamended.

2. The new title is approved.

Drawings

3. This application has been filed with informal drawings which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 3 and 8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3 refers to "the imager of claim 2," but the applicant has canceled claim 2. There is insufficient antecedent basis for this reference in the claim. For examination purposes, the examiner will assume claim 3 is dependent on claim 1.

Claim 8 refers to "the imager of claim 7," but the applicant has canceled claim 7. There is insufficient antecedent basis for this reference in the claim. For examination purposes, the examiner will assume claim 8 is dependent on claim 6.

See MPEP §608.01(n).

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

7. Claims 1, 4, 11-14, and 16 are rejected under 35 U.S.C. 102(a) as being anticipated by Bohm.

Regarding claims 1, 11, and 14, Bohm teaches of a color image sensor. Individual pixels are placed in an arrangement (abstract, line 2). As shown in Figure 1,

each pixel captures red, green, and blue color components of an image. The components are stored in storage units 21, 22, and 23, respectively (abstract, lines 15-16). When bi-directional photodiode 01 stores a red integration signal, for example, switch 07 closes so the signal may be stored in integrating device 8 (abstract, lines 14-20). This process is repeated for the green and blue signals, which are stored in capacitors 12 and 16, respectively. It is inherent that only one of switches 07, 11, and 15 are open one at a time; otherwise, the output signals would not be discernable as red, green, and blue.

Regarding claims 4 and 16, since the integration signals are accumulated in capacitors 08, 12, and 16, it is inherent that the signals are analog signals.

Regarding claims 12 and 13, the captured integration signals may be retrieved together (abstract, lines 18-19). In order for them to be retrieved together, it is inherent that all integrations must be complete for retrieval.

Claim Rejections - 35 USC § 103

8. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 3, 5, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bohm in view of Yanai.

Regarding all of these claims, Bohm teaches of a color image sensor as described in the above rejection of claim 1. However, Bohm is silent with regard to including an A/D converter in the circuitry of each pixel sensor.

Yanai discloses an image pickup device, with pixels shown in Figure 34. Each pixel includes an A/D converter 11, which allows a digital signal to be stored in the pixel's shift register 12. As stated in column 29, lines 32-37, this reduces the amount of analog information transfer, resulting in an image of higher quality. Therefore, it would have been obvious to one skilled in the art at the time of the invention to perform A/D conversion within each pixel and store the result, as described by Yanai, in Bohm's image sensor.

11. Claims 6, 9, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bohm in view of Elabd.

Regarding claim 6, Bohm teaches of a color image sensor as described in the above rejection of claim 1. However, Bohm is silent with regard to including a controllable color filter to cause the pixel sensors to indicate the color components one at a time.

Elabd discloses an image sensor with an array 480 of photosensitive elements 484. The entire resolution of the imager may be used to capture red, green, and blue images (column 4, lines 57-59). Storage location 490 may be used to individually store the RGB images captured by elements 484. Filters 462 in wheel 460 are used in front of the image sensor (column 2, lines 45-49). Interface device 92 controls the filter wheel 82 (column 9, lines 11-13). The advantage to using a color filter wheel is that it allows each pixel sensor to be used as a red, green, and blue sensor, which allows for increased resolution and/or decreased cost. For this reason, it would be obvious for one skilled in the art at the time of the invention to use Elabd's color filter wheel with Bohm's sensors.

Regarding claim 9, since the integration signals are accumulated in capacitors 08, 12, and 16, it is inherent that the signals are analog signals.

Regarding claim 17, Bohm teaches of a color image sensor as described in the above rejection of claim 11. Additionally, it is inherent in Bohm's system that for optimum operation only red light strikes bi-directional photodiode 01 when switch 07 is closed. Single primary colors of light would correspondingly be used with the other switches.

However, Bohm is silent with regard to including a controllable color filter to cause the pixel sensors to indicate the color components one at a time.

Elabd discloses an image sensor with an array 480 of photosensitive elements 484. The entire resolution of the imager may be used to capture red, green, and blue images (column 4, lines 57-59). Storage location 490 may be used to individually store the RGB images captured by elements 484. Filters 462 in wheel 460 are used in front of the image sensor (column 2, lines 45-49). Interface device 92 controls the filter wheel 82 (column 9, lines 11-13). The advantage to using a color filter wheel is that it allows each pixel sensor to be used as a red, green, and blue sensor, which allows for increased resolution and/or decreased cost. For this reason, it would be obvious for one skilled in the art at the time of the invention to use Elabd's color filter wheel with Bohm's sensors.

12. Claims 8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bohm in view of Elabd and further in view of Yanai.

Both claims may be treated as described in the above rejection of claim 6.

Regarding both claims, Bohm and Elabd are silent with regard to using an analog-to-digital converter with the pixels.

Yanai discloses an image pickup device, with pixels shown in Figure 34. Each pixel includes an A/D converter 11, which allows a digital signal to be stored in the pixel's shift register 12. As stated in column 29, lines 32-37, this reduces the amount of analog information transfer, resulting in an image of higher quality. Therefore, it would

have been obvious to one skilled in the art at the time of the invention to have Bohm's image sensor perform A/D conversion within each pixel and store these digital signals, as described by Yanai.

Conclusion

13. The papers filed on June 4, 2002, (certificate of mailing dated May 16, 2002) have not been made part of the permanent records of the United States Patent and Trademark Office (Office) for this application (37 CFR 1.52(a)) because of damage from the United States Postal Service irradiation process. The above-identified papers, however, were not so damaged as to preclude the USPTO from making a legible copy of such papers. Therefore, the Office has made a copy of these papers, substituted them for the originals in the file, and stamped that copy:

COPY OF PAPERS ORIGINALLY FILED

If applicant wants to review the accuracy of the Office's copy of such papers, applicant may either inspect the application (37 CFR 1.14(d)) or may request a copy of the Office's records of such papers (*i.e.*, a copy of the copy made by the Office) from the Office of Public Records for the fee specified in 37 CFR 1.19(b)(4). Please do **not** call the Technology Center's Customer Service Center to inquiry about the completeness or accuracy of Office's copy of the above-identified papers, as the Technology Center's Customer Service Center will **not** be able to provide this service.

If applicant does not consider the Office's copy of such papers to be accurate, applicant must provide a copy of the above-identified papers (except for any U.S. or foreign patent documents submitted with the above-identified papers) with a statement that such copy is a complete and accurate copy of the originally submitted documents. If applicant provides such a copy of the above-identified papers and statement within **THREE MONTHS** of the mail date of this Office action, the Office will add the original mailroom date and use the copy provided by applicant as the permanent Office record of the above-identified papers in place of the copy made by the Office. Otherwise, the Office's copy will be used as the permanent Office record of the above-identified papers

(i.e., the Office will use the copy of the above-identified papers made by the Office for examination and all other purposes). This three-month period is not extendable.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason T. Whipkey, whose telephone number is (703) 305-1819. The examiner can normally be reached Monday through Friday from 8 A.M. to 5:30 P.M. eastern daylight time, alternating Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy R. Garber, can be reached on (703) 305-4929. The fax phone number for the organization where this application or proceeding is assigned are (703) 872-9314 for both regular communication and After Final communication.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office, whose telephone number is (703) 306-0377.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to (703) 872-9314 for either formal or informal communications intended for entry. (For informal or draft communications, please label "**PROPOSED**" or "**DRAFT**".)

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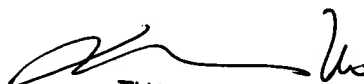
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Hand-delivered responses should be brought to the sixth floor receptionist of
Crystal Park II, 2121 Crystal Drive in Arlington, Virginia.

JTW

JTW

July 25, 2002



TUAN HO
PRIMARY EXAMINER